REPORT TO CONGRESS

Health-Related Research and Development Activities at USAID

An Update on the Five-Year Strategy, 2006–2010

MATERNAL HEALTH

October | 2010

Maternal Health

Issues and Rationale

Each year, about 358,000 women will die from preventable complications during pregnancy and childbirth. An estimated 87 percent of maternal deaths take place in sub-Saharan Africa and South Asia. Postpartum hemorrhage (PPH) continues to be the leading direct cause of maternal mortality in developing countries, followed by pre-eclampsia and eclampsia, sepsis, unsafe abortions, and obstructed labor. High-risk pregnancies due to poor birth spacing as well as the young age of the mother contribute to both maternal and child mortality.

Areas of Research and Introduction

Effective Pregnancy and Birth Interventions

Postpartum Hemorrhage Prevention

Postpartum hemorrhage is a leading cause of maternal mortality in low-income countries, accounting for more than 25 percent of maternal deaths. USAID is spearheading a global effort to prevent PPH through an approach known as Active Management of the Third Stage of Labor (AMTSL), in which oxytocin, controlled cord traction, and uterine massage after delivery of the placenta are used to reduce blood loss and transfusions.

Since 2004, USAID has been working with professional societies, researchers, United Nations agencies, non-governmental organizations (NGOs), and the private sector to introduce and expand the safe and effective use of AMTSL in at least 40 high-mortality countries. Nationally representative surveys of facility-based deliveries in 10 countries found limited use of AMTSL – use of this intervention was observed in only 0.5 to 32 percent of deliveries – and revealed multiple deficiencies in practice. These findings have been used to encourage Ministries of Health (MOHs), international partners, and policymakers to ensure that safe motherhood guidelines and practices include AMTSL.

USAID also is advancing research to simplify AMTSL, undertaking new product development, and determining the safest and most feasible strategies for introduction of these new products. A USAID-funded WHO trial of an estimated 20,000 patients is testing a simplified version of AMTSL in eight hospitals in Argentina, Egypt, India, Kenya, South Africa, the Philippines, Thailand, and Uganda. If this simplified version of AMTSL, which excludes controlled cord traction, is comparable to the full AMTSL package, the complexities of training workers in health facilities and communities would be reduced significantly, and coverage of AMTSL could be expanded more rapidly.

Misoprostol is an effective uterotonic to prevent postpartum bleeding; unlike oxytocin, it can be administered orally and does not require refrigeration. USAID-supported studies in Nepal, Afghanistan, and Senegal have shown the feasibility of community-based distribution of misoprostol, indicating that the drug should be considered when oxytocin is not available at the community level. In Nepal, where 82 percent of women do not give birth in health facilities, a USAID-supported study showed that it is feasible to achieve high-population coverage of misoprostol through trained community health volunteers under the Government primary health care system. In one district, coverage of drugs to prevent postpartum bleeding rose from less than 12 percent to more than 74 percent. The biggest gains were among women who were poor, illiterate, and living in remote areas. The study also showed that a community-based strategy to expand the use of misoprostol can help to increase institutional delivery rates. Based on these study results, the MOH is expanding community-based PPH prevention using misoprostol for the entire country. USAID is partnering with the Government of Nepal to monitor this national expansion.

Uniject™ is a simple, single-dose, non-reusable injection device that can be used by trained health workers in home deliveries and remote health settings. Administering oxytocin in the Uniject™ device to prevent postpartum bleeding has the potential to increase the use of AMTSL, as it reduces the logistical limitations that often are associated with the regular injection process. Since receiving regulatory approval in 2008, the oxytocin in Uniject™ device has been available for use in field evaluations and pilot introduction efforts in community settings. USAID is supporting studies to evaluate the use of the oxytocin in Uniject™ device in Nicaragua, Guatemala, and Honduras. With USAID's support, a second pharmaceutical manufacturer received regulatory approval for the oxytocin in Uniject™ device in 2009.

Pre-eclampsia/Eclampsia

USAID is undertaking a concerted research and introduction effort to reduce maternal pre-eclampsia/ eclampsia. Pre-eclampsia/eclampsia causes high blood pressure in women, which adversely affects blood flow to the placenta and can lead to life-threatening complications, including poor fetal growth and premature birth, as well as seizures and coma in the mother. When hemorrhage as a cause of maternal death declines, as it has in Latin America and the Caribbean (LAC), pre-eclampsia/ eclampsia becomes the leading cause of maternal death; it accounts for 26 percent of maternal deaths in the LAC region as well as 9 percent in Asia and Africa. USAID is working to develop, introduce, and scale up evidence-based, comprehensive intervention packages to prevent and manage pre-eclampsia/eclampsia in low-resource settings and identify technical and operational factors that will facilitate program implementation.

USAID is supporting a multicenter, multicountry study designed to identify biomarkers for pre-eclampsia/ eclampsia. The study will assess the predictive ability of selected biomarkers – both angiogenic and non-angiogenic – for pre-eclampsia/eclampsia as well as the feasibility of their use in low-resource settings. Promising biomarkers will be used to develop affordable pre-eclampsia/eclampsia screening interventions specifically designed for developing countries.

USAID is contributing to the development of an outcome-predictor tool that identifies pregnant women who are at high risk for complications of pre-eclampsia/ eclampsia. The proposed tool being tested in eight countries is a simplified symptom- and sign-based instrument especially designed for poorly resourced settings. An interim analysis indicates that it is feasible to develop the model. Once the tool is validated, this tool may be converted into a handheld, pictographic device for use in rural and remote settings to predict the likelihood of adverse outcomes based on the woman's clinical status. This would enable more timely case identification and assessment of case severity, as well as appropriate care decisions.

A USAID-supported multicountry quality of care survey is assessing pre-eclampsia/eclampsia care in health facilities. The survey is documenting prevalence of use, quality of implementation, and barriers to the performance of pre-eclampsia/eclampsia screening and management interventions; the results will provide baseline data on pre-eclampsia/eclampsia case identification and treatment practices. The survey also will assess other key maternal and newborn health interventions: AMTSL to treat PPH, partograph use during prolonged/obstructed labor, infection prevention, essential newborn care (ENC), and resuscitation in cases of birth asphyxia. Findings from this study will be used to guide quality of care improvement activities and policies within facility, district, and national fronts. Countries participating in this survey include Ethiopia, Kenya, Tanzania, Rwanda, Zimbabwe, Madagascar, Paraguay, and Indonesia.

Fistula Repair

Obstetric fistula is a condition in which an abnormal opening (or fistula) in the birth canal forms as a result of prolonged, obstructed labor and lack of emergency obstetrical care. An untreated fistula case can cause severe lifelong complications and disability and is a leading cause of maternal morbidity.

USAID is supporting a prospective facility-based study in Bangladesh, Guinea, Niger, Nigeria, Rwanda, and Uganda to identify factors that contribute to positive postoperative outcomes of fistula repair surgery. The study results will be used to identify potential new areas in need of investigation and opportunities to strengthen and standardize high-quality care.

Complementary to this work, a randomized controlled trial will test the efficacy and safety of using short-term catheterization after fistula repair rather than longer-term catheterization. Short-term catheterization has the potential to reduce hospital stays for women, free up bed space at facilities, and reduce costs, potentially allowing more women to receive clinical care.

USAID is supporting a multicenter retrospective record review of indications for cesarean deliveries in health facilities supported by fistula care programs. Since the provision of a safe and timely cesarean section is a key fistula prevention strategy, assessing the number of cesarean deliveries that are performed due to an indication of obstructed labor will provide insight into the number of averted fistulas. Findings from this study will be used to address challenges to data reporting and help enhance monitoring and evaluation (M&E) systems for emergency obstetric services to prevent death, fistula, and other complications.

Maternal Mortality and Morbidity Measurement Tools

Lack of standardized criteria and effective tools for defining and measuring maternal mortality and morbidity have led to inconsistencies in the way maternal deaths are classified and reported worldwide. USAID supports the development and refinement of tools to improve the measurement of maternal mortality and morbidity. Better data and direct measurement of maternal mortality

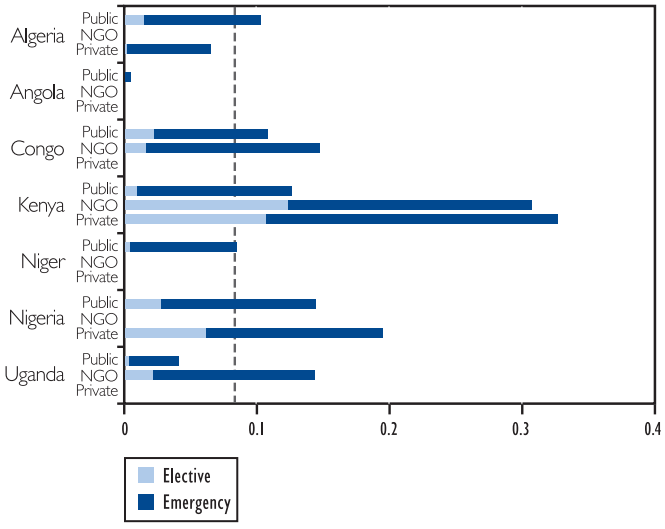
will decrease the application of the proxy measures that currently are used to assess maternal health interventions, quality improvement efforts, economic impact, and societal outcomes related to maternal death.

In partnership with WHO, USAID funded the revision of the maternal death classification system to standardize the cause distribution of maternal deaths within and across countries. This analysis established a standard definition and classification criteria for a maternal "near miss": a woman who nearly dies but survives a complication that occurs during pregnancy or childbirth, or within 42 days of termination of pregnancy. The maternal "near miss" is a useful indicator for identifying severe acute maternal morbidity and addressing weaknesses as well as strengths in obstetric care. USAID supported the development of a guidance tool for the application of the maternal death classification system to research studies and national vital statistics systems.

Assessment of Birth Care and Outcomes

The ideal proportion of cesarean sections ranges between 5 percent and 15 percent of births. Low cesarean section rates are indicative of health systems with insufficient access to emergency obstetric care; conversely, rates much higher than the optimal range are suggestive of weak elective indicators for surgery that may contribute to adverse outcomes and are a financial drain on the resources of weak health systems. A USAID-supported World Health Organization (WHO) global survey documented an exponential growth in cesarean deliveries within private, public, and nongovernmental settings in Latin America and Asia. The study found cesarean delivery rates of 33 percent in Latin America and 27.3 percent in Asia and documented an association between high rates of surgery and adverse outcomes for both women and newborns. In Africa, cesarean rates in facilities were very low, and emergency cesareans often were performed too late to prevent death (Figure 1). These findings will be used to guide policies and programs that address the use of cesarean sections in developing countries.

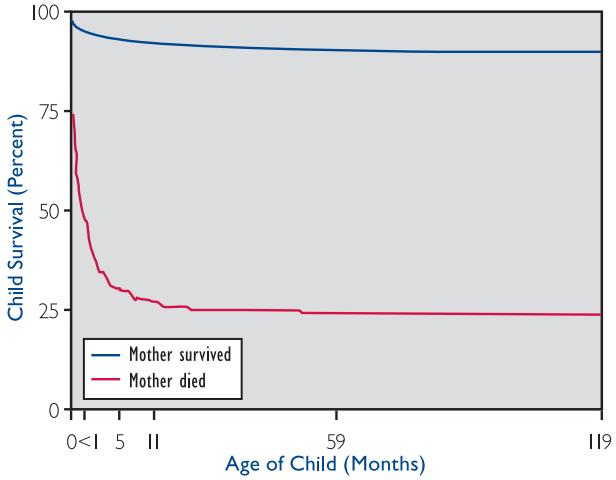
Figure 1. Proportion of Elective and Emergency Cesarean Deliveries by Facility Type and Country



Source: Shah, A., et al. (2009). Cesarean delivery outcomes from the WHO global survey on maternal and perinatal health in Africa. *International Journal of Gynecology & Obstetrics*, 107(3), 191–197.

Note: Broken line denotes median cesarean delivery rate for all facilities.

Figure 2. Kaplan-Meier Survival Curve from Birth by Survival Status of the Mother



Source: Ronsmans, C., et al. (2010). Effect of parent's death on child survival in rural Bangladesh: A cohort study. *The Lancet*, 375(9730), 2024–2031.

Building on this work, USAID has initiated a 16-country analysis of Demographic and Health Survey data on the growth of private facility delivery care. This analysis will provide insights into private birth facility utilization and coverage and costs to underserved populations.

In Bangladesh, a longitudinal study of the impact of maternal morbidity documented the effects of maternal death on child survival and social well-being. It found that a woman's death prior to a child's 10th birthday reduced the probability of the child's surviving to the age of 10 from 89 percent to 24 percent (Figure 2). Children aged 2–5 months who lost their mothers were 25 times more likely to die than those whose mothers were alive. In addition, compared with their counterparts, children

who lost their mothers were likely to have less education. These findings highlight the double burden associated with maternal death and the role that reducing maternal mortality plays in improving child survival.

Macropolicy interventions such as cash transfers, pay for performance, and the provision of health insurance may directly or indirectly have an impact on women's access to and utilization of health services. A USAID-supported study will examine the intended and unintended consequences of these mechanisms on health-seeking behaviors and the health system's capacity to deliver care.

The ability to recognize the signs and symptoms of an illness, its perceived severity, and maternal health care-seeking behaviors during pregnancy and the postnatal period are associated with maternal-newborn mortality and morbidity outcomes. A USAID-supported study will assess the effectiveness of existing communication strategies – CHWs, facility outreach, and community mobilization – in influencing the ability of families to recognize maternal-newborn complications and seek appropriate care.

A final component of USAID's effort to improve utilization of skilled care at birth entails a study to identify contributors to the mistreatment of women around the time of labor and delivery in facilities.

Healthy Timing and Spacing of Pregnancies to Ensure Healthy Birth Outcomes

USAID continues to support research and analyses to better understand how to prevent high-risk pregnancies, implement effective service delivery strategies, and adapt counseling and family education approaches to different country settings to reach women and girls in need.

A USAID study of the contribution of increased contraceptive use to maternal mortality reduction in 45 developing countries found that increased used reduces the total number of births, and thus women's potential exposure to childbirth-related health threats. In addition, it reduces the number of high-risk births. Consequently, when contraceptive use in a country rises to 80 percent, the percentage of births with any risk drops to nearly 35 percent.[1] USAID is using these findings to develop evidence-based counseling tools to reach women and girls in all high-risk groups.

In Nepal, USAID research documented that counseling on Healthy Timing and Spacing of Pregnancies (HTSP) interventions positively influenced two-year family planning (FP) continuation rates. The results of this work will be used to plan the scale-up of programs in Nepal. In rural Bangladesh, a study is testing the feasibility of integrating postpartum FP/HTSP counseling into a community-based maternal and neonatal program. Preliminary analysis found that a focus on FP's role in health outcomes facilitated client-provider discussions. It also found that community health workers (CHWs) are able to deliver FP and HTSP messages. This study is expected to be completed in 2012.

Another study in Bangladesh is examining eight different pregnancy timing and spacing patterns and their association with health outcomes. USAID will continue to build on these study findings to strengthen family planning, maternal and child health (MCH) programs, and women- and girls-centered care.

To address young adolescent pregnancy and child marriage, in Bihar, India, USAID is evaluating the impact of a multisectoral, gender-equity approach on increasing marriage age, delaying the first pregnancy, and improving the timing and spacing of subsequent pregnancies.

Evidence-based HTSP guidelines have been institutionalized into national policies, protocols, and curricula in Angola, Guinea, and Kenya, as well as in Nepal through the country's pending National Safe Motherhood Act.

---

1 Stover, J. & Ross, J. (2010). How increased contraceptive use has reduced maternal mortality. *Maternal Child Health Journal*, *14*(5), 687–695. Published online July 31, 2009.